

## Abstract

The signal light is coupled with control light that is emitted from a laser diode 3 by a WDM coupling device 2. The optical fiber 4 on one end of the WDM coupling device is mode-matched with the optical waveguide of the quasi-phase matched quartz crystal 1 by a V groove 1a. The output light generated by the difference frequency generation of the signal light and control light is again guided to the optical fiber 5 from the quasi-phase matched quartz crystal 1 by the other V groove 1a. Then, this light is incident on the optical filter 7, so that the signal light and control light are cut. The optical fiber 9 is connected to a fiber amplifier 10. In cases where a quasi-phase matched quartz crystal is used as the wavelength conversion element, the wavelength conversion efficiency drops compared to lithium niobate as a result of the nonlinear constants being small. The fiber amplifier 10 is installed in order to compensate for this. As a result, a wavelength converter for use in optical communications can be obtained which shows little problem of optical damage, which can be used at a broad range of temperatures, and which also has good coupling characteristics with quartz type optical fibers.